

Comparing Two-Dimensional and Three-Dimensional Mandalas for Anxiety Reduction

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Masters of Arts in Art Therapy and Counseling (MAATC)

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Institutional Review Board (IRB) Albertus Magnus College

DATE: Mar. 4, 2021

Dear Caroline,

This letter serves to officially notify you of approval by the Albertus Magnus College IRB for you to conduct your study on “mandalas and its effects on anxiety” as described in your IRB application. Please ensure that the confidentiality of your research participants is properly protected and that you remain within the boundaries you stated in the IRB application. If those boundaries change in relation to the study participants, please notify the IRB as an amendment may be necessary.

Your study is authorized to begin as of the date of this approval letter and is valid for one year, ending on Mar. 4th, 2022.

If you have any questions, please contact Dr. Joshua Abreu, the IRB Administrator, by e-mail at jabreu1@albertus.edu.

Sincerely,

Joshua Abreu, Ph.D.
IRB Administrator

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Abstract

In this study use of clay versus color pencils to make mandalas were compared for changes in state anxiety levels. The State Trait Anxiety Inventory was used to measure anxiety levels as a pre and post self-report measure. It was hypothesized that the clay group creating mandalas would have the largest decrease in anxiety scores from pre to post in comparison to the color pencils group creating a mandala due to the physical touch of clay that enables the creator to engage in emotional and mental processes. The results show that clay use is significantly better at reducing anxiety than the color pencils.

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Comparing Two-Dimensional and Three-Dimensional Mandalas for Anxiety Reduction

In recent years, there has been a growing awareness of anxiety. Those with anxiety often struggle to control excessive worry and intruding thoughts about tasks in their everyday routines. Anxiety disorders are a very common mental health problem (Salza et al., 2020). According to the Diagnostic and Statistical Manual of mental Disorders (5th ed.; DSM-5; American Psychiatric Association, 2013) anxiety is identified as apprehension concerning a future threat. Anxiety can range from being a normal reaction to stress alerting us to danger, to maladaptive symptoms of restlessness, fatigue, poor concentration, irritability, muscle tension, and difficulty falling or staying asleep.

Goodwin et al. (2020) examined data collected from the National Survey on Drug Use and Health (NSDUH) public records in an effort to track the prevalence of anxiety. This organization hosts a website that provides up to date information about tobacco, alcohol, and mental health disorders that occur in the United States. With a large sample size that ranged from 37,349 to 42,697 per year, participants filled out a self-report to measure anxiety in the month prior. They found that anxiety symptoms had significantly increased in adults within the United States between 2008 to 2018. For instance, in 2008, 5.12% of adults above the age of 18 had self-reported symptoms of anxiety; whereas, 6.68% had reported symptoms in 2018. The researchers concluded that anxiety had increased more rapidly among adults in the 18 to 25-year-old age group when compared to any other age groupings, which suggests that anxiety management is a significant issue for mental health in the United States.

Given the prevalence of anxiety symptoms throughout the U.S., some therapeutic techniques have served as treatment models. One common form of treatment is Cognitive Behavior Therapy (CBT) which can be administered individually or in group settings (Whitfield,

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2010). Cognitive Behavior Therapy directs patients to recognize distortions in thinking, thus helping them gain a better understanding of their behaviors, learn to use problem solving skills, and develop a greater sense of confidence in their abilities (American Psychiatric Association, 2017). Borkovec and Costello (1993) conducted research comparing three treatment conditions to examine efficacy for treating Generalized Anxiety Disorder (GAD). The three conditions in this study were applied relaxation, CBT, and non-directive therapy. The participants ($n = 55$) all met the criteria for GAD and completed a daily diary to write down their thoughts, feelings, and what occurred throughout their day. The journaling occurred at least three times a day before therapy, during therapy, and after the therapy sessions concluded, as well as a week before follow-up testing. Participants then completed the state subscale of the State-Trait Anxiety Inventory (STAI), Zung Self-Rating of Anxiety scale, Reactions to Relaxation and Arousal Questionnaire, Penn-State worry questionnaire, and the Beck Depression Inventory.

The goal of Borkovec and Costello's (1993) non-directive condition was to facilitate and deepen knowledge about self and anxiety. Participants were encouraged to have an open dialog with the therapist about situations where they had feelings of anxiety, however, the therapist's role was to simply listen to the client, and not give advice or suggestions of coping. In the applied relaxation condition, patients were to self-monitor reactions and learn how to catch spiraling thoughts while the researchers interviewed the participants. Additionally, attention was focused on the present experience rather than on past experiences or thoughts. Lastly, the CBT conditions provided opportunities for clients to use coping methods to alleviate fear, reduce anxiety-inducing thoughts and feelings, and enhance cognitive coping and relaxation skills. At the conclusion of the 12-week therapy sessions, results showed that there was no significant difference in anxiety reduction between the applied relaxation condition and CBT condition, but

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CBT had a significant improvement for anxiety symptoms in long-term follow-up testing compared to the two other conditions. Borkovec and Costello concluded that applied relaxation and CBT were more effective than the non-directive condition. This study suggests that CBT is effective in treating generalized anxiety.

In a recent study, by Salza et al. (2020) compared CBT administered in-person to a Therapist Assisted Computerized Cognitive Behavior Therapy Program (TacCBT). Participants ($N = 50$) consisted of adults 18-50 years old with diagnosed anxiety disorders. The researchers administered four different anxiety measures including the STAI before and after the interventions. Participants were randomly divided into three treatment conditions: (a) in person CBT group condition and pharmaceutical treatment, (b) TacCBT group and pharmaceutical treatment, and (c) pharmacological treatment only. Participants in the TacCBT virtual clinic received the same treatment content as those in the person-to-person group, however, the delivery format was biweekly through a slideshow with audio files rather than in person treatment. Participants in the psychopharmacological treatment only group received bimonthly clinical consultation. Data analysis indicated that all three groups showed significant improvement in anxiety symptoms, while only those in both CBT groups showed improvement in social functioning and cognitive flexibility, as compared to the group that only received drug treatment. As a result, CBT was suggested to be an effective form of treatment for anxiety regardless of delivery format.

While CBT and relaxation techniques are effective for treating symptoms of anxiety, there are also several studies that discuss art therapy as a beneficial therapy for anxiety. Art therapy is an integrative mental health and human services profession that is facilitated by an art therapist who actively supports personal and relational goals through the creative process

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(American Art Therapy Association, 2017). Morris (2014) addressed the idea of integrating art therapy with CBT. The author noted CBT as an effective way to alleviate anxiety symptoms in those with panic disorders with agoraphobia and those with GAD. The researcher discussed that CBT requires clients to think abstractly and that individuals who display lower verbal skills or have difficulty thinking abstractly might struggle with CBT as a stand-alone treatment. However, according to Morris, combining art therapy and CBT can provide a concrete foundation for abstract thinking by offering a visual, and tactile experience for the client to express their thoughts and emotions nonverbally.

Abbing et al.(2019) also emphasized the visual arts (i.e. painting, drawing, sculpting clay) as an important non-verbal approach in therapy as it can provide highly effective treatment for those who struggle with anxiety disorders. Their study examined the effects of art therapy for women with anxiety symptoms. Participants ($N = 102$) initially completed the Dutch version of the Four Dimension Symptoms Questionnaire to measure anxiety symptoms before they began three months of art therapy treatment. However, only 47 women completed the study in its entirety. The participants received 10-12 individual art therapy sessions over three months working with clay, drawing, and painting materials. The researchers found that participants who had difficulty with emotion regulation prior to art therapy, had the most improvement in reducing anxiety symptoms. At the end of treatment the post-test results showed that participants experienced a decrease in anxiety symptoms by 46%. However, it should be noted that there was no control condition or other comparison group, so it cannot be determined that the therapy and not the passage of time that was the cause of improvement.

It is important to understand the physical and structural qualities of art materials, when selecting and utilizing them in art therapy practice. Resistive materials (such as pencils) are

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defined by the degree of force that is needed to achieve a mark on the page; while more fluid materials (such as paint) require less effort and have minimal structural integrity (Hinz, 2009). It is suggested that the ability for the user to more easily relax and express themselves is largely dependent on the fluidity or resistive quality of the chosen material.

Not only is the choice of art media an important consideration for creative expression, but materials are a significant element of art therapy treatment. The type of art materials can impact both process and product outcomes in artistic expression. Kagin and Lusebrink (1978) proposed the Expressive Therapies Continuum (ETC) as a framework for examining the use of various art media. The ETC explains how individuals work with art materials to process information (Hinz, 2015). It classifies art materials into sets of polarities such as resistive art materials that include color pencils and crayons and the more fluid art materials such as watercolors or clay. They also addressed the processes required to work with materials such as structured versus unstructured (e.g., developing a photograph in a darkroom vs. painting) The ETC is organized into three levels of experiences resulting from working with art materials: Kinesthetic/Sensory, Perceptual/Affective, and Cognitive/Symbolic. There is a fourth quality, the Creative Dynamic, that is experienced when using multiple art materials from multiple levels of the ETC resulting in a variety of emotional, cognitive, and physical experiences in tandem.

Hinz (2015) explained that the Kinesthetic level, for instance, focuses on energy release and expression using body movement, while Sensory level focuses on the tactile feel of the art materials. Often, three-dimensional materials will be implemented in order to promote Kinesthetic/Sensory experiences during artistic expression. The Perceptual level refers to structural qualities of expression and the Affective level describes emotions accessed during an individual's experience with the art materials. Often, more fluid materials like paints and color

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choice require little structure for use; which can be suggested in order to promote easier access to emotional experiences during artistic expression. Finally, the Cognitive level focuses on analytical and logical thought that is conveyed during artistic expression so that problem solving can be a part of the art making. The Symbolic level deepens the meaning of the artwork for the individual. Often more highly structured art making with easily controlled materials such as pencils and pens will be used to engage the cognitive/symbolic levels of expression.

The application of the ETC in art therapy suggests the use of color pencils increases structure suggesting an individual can feel more in control of the art making process. Using structured materials such as colored pencils allows individuals to have refined control of how they express their thoughts and emotions. However, clay is more likely to engage the client with tactile experiences and allows more regressive experiences.

Snir and Regev (2012) qualitatively analyzed responses to various art materials that are often used in art therapy sessions. Participants ($N = 120$) consisted of undergraduate students who attended the course titled “Art Materials in Educational and Therapeutic Framework.” Students consented at the beginning of the course and continued to participate in the study over a three-year period. Based on their reflections in the course, participants were then selected to be part of the study. The majority of participants had no background in art. However, during the course, participants attended a two hour art workshop that occurred once a week. Throughout the workshop, participants were provided with felt-tipped markers, oil pastels, polymer paint, finger paints, and clay. From these materials participants created freely with one of the five materials offered. After completing the workshop, participants recalled experiencing excitement and curiosity about the different materials. They also noted that they had feelings of fear due to the messy materials and lack of sense of direction. When working with the markers and oil pastels,

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participants found that these materials provided structure, limited mess, but they had a hard time connecting with emotional expression and release. When using the Gouache paints, the participants reported that this material had strong colors and potential for expression and release in comparison to the markers. The finger paints had similar reports to the gouache paints. In contrast, clay work offered direct contact with the medium like the finger paints, but was cleaner and easier to control. The researchers concluded that different materials could provide different opportunities for art therapy treatment.

A variety of art materials have been examined as variables in the reduction of anxiety symptoms. Kruk et al. (2014) examined brain wave frequency in a study that examined the different ways that various art materials used for anxiety reduction impact expression. They sought to determine which parts of the brain were stimulated by using specific art materials. Participants engaged in two different art making conditions: clay sculpting and drawing with markers. The researchers hypothesized that using different art materials would produce different qEEG results. They also predicted that the right parietal lobe would be affected by art making and that overall anxiety levels would reduce after art making in both conditions. Participants ($N = 14$) consisted of female college students who completed the STAI as a pre-post instrument to measure anxiety. The results supported the hypothesis that drawing with markers did have a different effect on the frontoparietal qEEG when compared to free sculpting with clay. In particular, the marker's condition had no effect in the frontal lobes while the clay condition had an increase of activity. Researchers noted that there was a decrease in anxiety from the art making, however, no comparisons of the materials were offered.

More specifically, the use of clay has been examined as a technique that can facilitate self-soothing experiences. Sholt and Gavron (2006) argued that clay is a familiar material in art

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therapy and that working with it could provide an intense and powerful tactile experience because the physical touch of clay enables the creator to engage in emotional and mental processes. Further, they suggested that clay work enabled clients to encounter the constructive and destructive parts of themselves which could be useful in therapy. Sholt and Gavron, concluded that the physical use of clay involves body expression, allowing an individual to process their emotions, memories, and fantasies.

Wong and Au's (2019) qualitative study compared two conditions (a) clay work with bare hands following a directive and (b) clay work with gloves performing the same directive. The participants ($N = 36$) spent 30 minutes creating freely with clay after being randomly assigned to one of the two conditions. Researchers measured each participant's mood and well-being before the clay work, immediately after the clay work, and one week after the clay work session had occurred. Participant's mood was measured using the Positive And Negative Affect Schedule and psychological well-being was measured using several measures such as the Warwick-Edinburgh Mental Well-Being Scale, The Multidimensional Assessment of Interoceptive Awareness Scale, and The State Mindfulness Scale. Qualitative results of the study indicated that those who participated in the no glove condition with no gloves had an increase in positive mood compared to participants in the glove condition. There was no change in negative mood for participants that used gloves. The researchers noted three outcomes in their research: (a) Using bare hands in clay work provided a unique experience; (b) Touch stimulated mindfulness; and (c) Using bare hands allowed a deeper connection between the creator and the clay. The authors expressed that the use of clay not only encouraged a tactile experience, but also allowed the hands to be a major tool in the creative process for their participants.

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More specific to the use of art materials in the treatment of anxiety, Kimport and Hartzell (2015) conducted a study that focused on the use of clay to reduce anxiety symptoms. They hypothesized that clay manipulation creating pinch pots would lead to a decrease in anxiety. In this study, 49 adults in a psychiatric facility were provided with equal amounts of white Model Magic and white Air Dry Clay, each about the size of a baseball. The participants had a maximum of 10 minutes to work with the clay to create pinch pots. The researchers used STAI as a pre-and post-measure of anxiety. Data analysis supported the hypothesis that anxiety symptoms would decrease significantly although there was no control group to compare the findings to.

In addition to the choice of materials in an art therapy experience, the choice for a directive may be directly related to the symptom being targeted. Because of the connection between relaxation therapies and treatment of anxiety (e.g. Borkovec & Costello, 1993), the use of drawing and coloring mandalas has been adapted into mainstream art therapy. The term mandala originates from the Sanskrit word meaning magic circle or center (Duong et al., 2018; Jung, 1973). A mandala is a circular geometric design that appears in various art expressions, religious traditions, meditative practices, and is often used to promote psychological healing and integration (DeLue, 1999; Henderson et al., 2007). Jung et al. (1964) discussed the mandala as means to restore experiences to what was once previously an existing order. A mandala serves a purpose of allowing free expression by providing a form to center oneself. The authors further elaborated the mandala as a way to represent the psyche or self as a whole. Duong et al. (2018) discuss how identified Jung's advocacy of the mandala as a therapeutic tool, suggesting that the act of drawing mandalas had a soothing and healing impact on their patients. They noted art

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therapists have since used the mandala as a central instrument for self-awareness, self-expression, conflict resolution, and healing.

Several empirical studies have focused on two-dimensional (2-D) mandala making to reduce anxiety (e.g., Campenni & Hartman, 2019; Henderson et al., 2007, Serice & Vennet, 2012). Duong et al. (2018) did research with participants ($N = 93$) ranging in ages from 22-56 years old. The participants were randomly assigned to two coloring conditions: (a) mandala design, and (b) free drawing. The groups were allotted 12 minutes to color or draw with crayons based on the condition assigned. The STAI was administered pre and post the conditions to measure anxiety. The results indicated that there was a significant difference in both conditions in that each reduced anxiety. It was indicated that there was no significant difference between the mandala condition and the coloring on a blank sheet of paper condition. The researchers concluded that coloring a blank sheet of paper and coloring a mandala were equally effective methods in reducing anxiety among the participants.

A similar study conducted by Cichowicz (2012) examined mandalas and their effect on anxiety reduction. Participants ($N = 45$) were randomly assigned to one of three conditions: (a) intricate mandala design group, (b) simple mandala design group, and (c) the free drawing control group. The researcher also used the STAI as a pre- and post-test measure and the results indicated that there was a significant decrease in the STAI scores for the intricate and simple mandala conditions, but not the free draw. This may suggest that the structure mandalas provide can be soothing in reducing anxiety than the free draw which provides no structure.

Although both of the previous studies used only 2-D drawing and coloring materials for the mandala art making, there have also been studies that compared the effects of 2-D and 3-D art materials. Crane (2009) investigated the impact of using different art materials on stress

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reduction. The participants ($N = 30$) ranged in ages from 18-58 years old and were randomly assigned to one of three conditions: (a) drawing pencil, (b) self-hardening clay, and (c) watercolor paint. The participants were allowed 20 minutes of art making and were instructed to create what they were feeling in the moment. The researcher used the STAI as the pre- and post-test measure. While there was a decrease in anxiety for all three conditions, there were only significant changes in the clay and watercolor conditions. Crane concluded that fluid materials have a greater impact to alleviate stress due to the release of energy and deep expression allowed through this medium.

The literature has presented several studies that examine how different art materials elicit different responses (e.g., Kagin & Lusebrink, 1978; Kruk et al., 2014; Snir & Regev, 2012). Additionally, only the use of 2-D mandala art making has been researched to reduce anxiety. Because clay work, a 3-D material, has been shown to be an effective medium for reducing stress (Crane, 2009), the current study will examine the potential added benefit of using clay in mandala making over 2-D materials for reducing anxiety.

For this present study, it is hypothesized that adults who use the 3-D art making material clay to create a mandala will show a greater reduction in anxiety when compared to those who use the 2-D material color pencils, because the fluidity of this material as well as the sensory tactile and kinesthetic movement experiences involved in using clay will promote deeper processing of emotions, memories, and fantasies than the more restrictive and controlled experiences of color pencil.

Method

Participants

Participants consisted of 21 adults, ages 18-38 ($M=25.45$, $SD=5.11$). This sample was made up of 8 males (38.1%) and 13 females (61.9%). Most ($N = 18$) participants identified as Caucasian (85.7%), 1 identified as African American/Black, 1 identified as Asian/Pacific Islander, and 1 identified as Hispanic/Latinx. Participants were recruited in Southern New England, using a flyer (Appendix A) that was posted on several social media platforms as well through snowball sampling recruitment.

Instruments

State-Trait Anxiety Inventory

Charles Spielberger developed the State-Trait Anxiety Inventory (STAI) to measure anxiety. The STAI is a 40 item self-report questionnaire broken down into two parts, the state scale and the trait scale. The state subscale measures the current state of anxiety, while the trait scale measures the characteristic presence of anxiety (Spielberger, 1983). Both subscales consist of 20 self report questions, and answers are rated on a 4-point Likert-type scale, ranging from 1 = not very much and 4 = very much so. Scores for each subscale are summed, and higher rated scores suggest greater anxiety. Spielberger found the internal consistency alpha coefficient ranged from .86 for high school students to .95 for military recruits for each subscale. As evidence of validity, Julian (2011) found the correlation of the STAI to range from .73 and .85 when being compared to the Beck Anxiety Inventory and Hospital Anxiety and Depression

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Scale-Anxiety measures. Julian noted the STAI has become one of the most commonly used measures for anxiety. Only the STAI state form was used for the study.

Materials

Participants in the drawing condition were provided with 8" x 11 ½" (22 cm x 28 cm) white drawing paper and a standard 8-pack of Crayola color pencils. In the clay condition, participants were provided with 8 oz (226.80 g) of white Crayola self-hardening modeling clay, and a sheet of paper to protect the table surface for easy clean up.

Procedure

The participant and researcher met synchronously using a private Zoom videoconferencing platform in 1:1 meetings. This platform is HIPPA compliant. Art materials were sanitized and placed into individual packets. Documents such as the consent form (Appendix B), image release form (Appendix C) and debriefing form (Appendix D) were emailed to them via a secure password protected online form via Adobe reader DC. The art making/demographic form (Appendix E) and pre- and post-test versions of the STAI form Y (state subscale), were filled out via Google Forms. A scheduled pick up/drop off for art materials was agreed upon before the session.

Participants were randomly assigned based on a coin toss to one of two art materials conditions to create a mandala using color pencils or using clay. All participants were instructed to first e-sign the consent form provided, and complete the STAI, before art making begins. Then, the researcher defined what a mandala is by saying, "A mandala is a circular geometric configuration of symbols and the design appears in various art expressions, religious traditions, and meditative practices and is used to promote psychological healing and integration." Participants were shown an example of what the mandala based on their condition may look like.

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All participants were instructed to then create mandalas with their given materials for 20 minutes. The researcher also asked the participant to tilt the camera down in order to view the art making during the Zoom session. After art making was completed, the researcher administered the post STAI. Next, an art materials use and demographics survey was completed, and then the participant was debriefed on the study. Lastly, the researcher asked the participant to angle the camera at the artwork to take a screenshot as a way to photograph the artwork.

Results

Scores on the STAI were summed up after reverse scoring relevant items (1,2,5,8,10,11,15,16,19) with pre-tests scores for the entire sample ranging from 31 to 48 ($M=37.40$, $SD=7.42$) and post-test scores ranging from 21 to 40 ($M=29.50$, $SD=6.31$). A t test for paired samples shows there is a significant decrease in anxiety ($M = -7.90$, $SD = 5.88$) for using pencils $t(9) = -4.25$, $p = .001$ (one tail). Pretest scores ($M = 37.40$, $SD = 7.43$) were higher than post test scores ($M = 29.50$, $SD = 6.31$). For the clay condition, there is also a significant decrease ($M = -15.00$, $SD = 8.51$) in anxiety $t(10) = -5.85$, $p < .001$ (one tail). Pre-test scores ($M = 47.73$, $SD = 12.63$) are higher than post-test scores ($M = 32.73$, $SD = 7.93$).

To determine which condition had the largest decrease in anxiety, an independent t -test indicated that in the color pencils condition, there was a significantly smaller decrease in anxiety ($M = -7.90$, $SD=5.87$), than in the clay condition ($M = -15.00$, $SD=8.50$), $t(19) = 2.20$, $p = .02$ (one tail). The effect size using Cohen's d is .96, indicating that there is a large effect size. This indicates that both groups had a decrease in anxiety score, but the clay condition had a substantially greater decrease in anxiety in comparison to the color pencils condition.

Feedback indicated that 14 participants (66.7%) enjoyed the material assigned to them. A Pearson Chi-Square was used to determine the relationship between preference of art material

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and type of material assigned and the results are not significant ($X^2(1, = 2.38, p = .1.22)$), therefore there were no discrepancies in liking of the assigned art materials across conditions. Independent t-tests examined change in anxiety by whether or not participants liked the assigned art material, and results show no significant effect ($t(19) = 1.00, p = .332$ (two tail)).

Discussion

In this study, it was hypothesized that adults creating a mandala would show greater reduction in anxiety in the clay condition, when compared to those in the color pencil condition. Both conditions had significant decreases in anxiety after art making, but the results further supported the hypothesis as the clay condition had significantly greater effect.

These findings are consistent with the literature in that different art materials elicit different emotional and mental responses (e.g., Kagin & Lusebrink, 1978; Kruk et al., 2014; Snir & Regev, 2012). Specifically, Cichowicz (2012) reported anxiety reduction with mandalas while using 2-D art materials, and Kimport and Hartzell (2015) found using clay was helpful to reduce anxiety. In the current study, clay work not only enabled clients to encounter the constructive and destructive parts of themselves (Sholt & Garvon, 2006), but also the participants who used clay had a greater reduction in anxiety compared to those who used color pencils. The greater change between pre and posttest scores may have been due to the fluidity of the clay material which has been suggested to allow for a release of energy and deeper expression (Crane, 2009).

Some themes noted in the art varied depending on the condition assigned. In the clay condition, themes were suggested in the use of similar shapes and symbols created by the participants. For example, most of the final sculptures included small spheres, thin or thick rods, coiled rods, and a thick barrier around the center. Participants that coiled clay throughout their mandala, often included several spheres. For example, a 25-year old Caucasian female in the

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clay condition experienced the largest decrease in anxiety in the study. Her pre-test score was 66 and post test score was 36, dropping by 30 points. This participant also reported feeling notably calmer after engaging in the clay process. Further, the artwork (Figure 1) incorporated the most detail in this condition through the participant's use of multiple symbols and shapes. The outer circular edge was a large, thick rod, with several coils, thin rods, and small spheres leading to the center of the mandala. Not only did this participant provide in verbal and written feedback that she enjoyed using the art material assigned to her, but the significant decrease in anxiety may also be noted in her use of spheres and coils to physically express any feelings of anxiety reported in the pretest.

Conversely, a 33-year old Caucasian female, also in the clay condition, experienced the smallest decrease in anxiety. The pretest score was 38 and the post test score was 34, dropping by four points. The artwork (Figure 2), however, also incorporated several spheres and rope-like coils circling to the center of the mandala. Although the difference between the scores showed the smallest decrease, it is significant that this participant disclosed having engaged in art therapy previously and expressed enjoyment in art making. She also included that despite clay being messy, she found the art making process during the study to be very "mindless," meaning that there was no thought or pressure of an end product. Further supporting that clay work has the potential to engage both emotional and mental processes by engaging both sides of the brain (Sholt & Gavron, 2006). Along with the similar shapes and symbols found in the sculptures created by the participants in the clay condition, a final theme was that of a circular center or a personal symbol formed on the flat surface of the clay. Some of the mandalas were built up with walls around the center including one participant who molded walls around the mandala stating that they were "protecting" what lies under the center. In addition, another participant remarked

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that her previous experiences with coloring mandalas on paper caused issues of wanting to stay inside the lines, but that her experience with the clay during this study allowed her to feel “there are no mistakes” when using this material.

In the color pencil condition, some notable themes in the artwork were in the line quality and pencil pressure used in art making. Several participants used harder pressure and deep colors such as red, black, blue, and purple towards the center of their mandala drawings. Moving away from the center, the colors became warmer with yellows and oranges and the line pressure was noticeably lighter in pressure. Also, noted in this condition was the use of sharp jagged lines which several participants started with at the center of their mandala and branched out using the line all the way to the outer part of the circle. Lastly, there were common shapes such as stars, circles, squares, and diamonds.

For example, a 24-year old Caucasian female who experienced the largest change in anxiety for this condition (pretest score = 48; posttest score = 30 – a decrease of 18 points) depicted a small purple floral like center surrounded by circular shapes with five sharp points reaching out of the center (Figure 3). Overall this image was made using heavy pressure, cross-hatching patterns, and scribbles throughout the mandala. The participant noted that they had a “stressful day” prior to meeting with the researcher. Similarly, a 25-year old Asian/Pacific Islander female in the color pencil condition experienced no change in anxiety (the pretest and post-test scores were 33). While there is no change in scores in this condition, the total score is low for the STAI. The participant shared not having previous knowledge of a mandala, but discussed having a background in art. The image (Figure 4) depicts a large diamond-like shape in the center of the mandala with four points coming out of the mandala. The center is colored in with black (the darkest color provided) with several different colors outlining the center until

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coming to a point that goes beyond the mandala outline. Warmer colors are used outside the center while black and purple are the predominant colors in the points that reach outside of the mandala.

The artwork made by both of these participants may indicate strong feelings of anxiety mainly due to the hard pressure, cross-hatching patterns, and color choices that were used in each of the mandalas. However, from their pre and posttest scores and their statements about the art making process, the repetitive motions that were used and the control offered by the color pencils may have provided a soothing sensation (Kagin & Lusebrink, 1978).

Other notable conclusions of this study were the level of engagement the participants showed with each material, how they viewed the final product, and their overall use of time to complete their art making process. For instance, in the clay condition, most participants openly engaged in conversation with the researcher during their 20-minute art making process. However, most participants in the color pencils condition did not engage in conversation and seemed more focused on the task of drawing their mandala. It is also curious that some of the participants seemed to want to please the researcher regarding the final outcome of their work due to their light-hearted comments about their piece during the art making process. Lastly, although all participants were provided 20 minutes to complete their art making process, most participants in the clay group finished early, whereas the participants in the color pencils condition used the full 20 minutes.

A limitation of this present study is that it was a small sample size. There were a total of 22 participants out of the expected 30, and a larger sample may have provided more significant results in determining changes in anxiety among participants. The demographics were also not very diverse in race/ethnicity, gender, and age. About 85.7% of participants were Caucasian,

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61.9% of the participants were female, and about 80% of the participants were below the age of 30. A broader range of participants could result in broader scores from pre to post in anxiety levels related to different groups and may have offered more generalizable findings. COVID-19 was another limitation faced in this study as it restricted recruitment strategies. For instance, participants may have been reluctant to meet with a stranger during the pandemic to exchange art materials. Additionally, potential participants may have had limited access to technology for the Zoom meetings.

In conclusion, this study examined the impact of two art materials on anxiety reduction while creating a mandala. Findings show that both clay and color pencils decrease anxiety, but consistent with prior research and theory, the clay condition had a larger decrease in comparison to color pencils. The results of the research were beneficial to art therapy as it supports through art making whether it is color pencils or clay, there is a significant decrease in anxiety. Future research should use larger sample sizes inclusive of different demographic groups. Studies could be designed to examine anxiety reduction comparing art materials when used in art therapy versus other expressive therapies or in verbal therapies. For instance, research into the relationship between the therapy provided and the participant's level of verbal engagement could be a point of further investigation. Follow-up research on the physical properties of clay as a therapeutic material are also suggested. Although comparing two different art materials to determine a decrease in anxiety supported this study's hypothesis, including a control group in future research may further support the value of art therapy as an effective form of treatment in reducing anxiety with a focus on specific art materials.

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Figure 1. Example of clay mandala, by a 25 year old Caucasian female in the clay condition group with the largest decrease in STAI scores from pre to post.

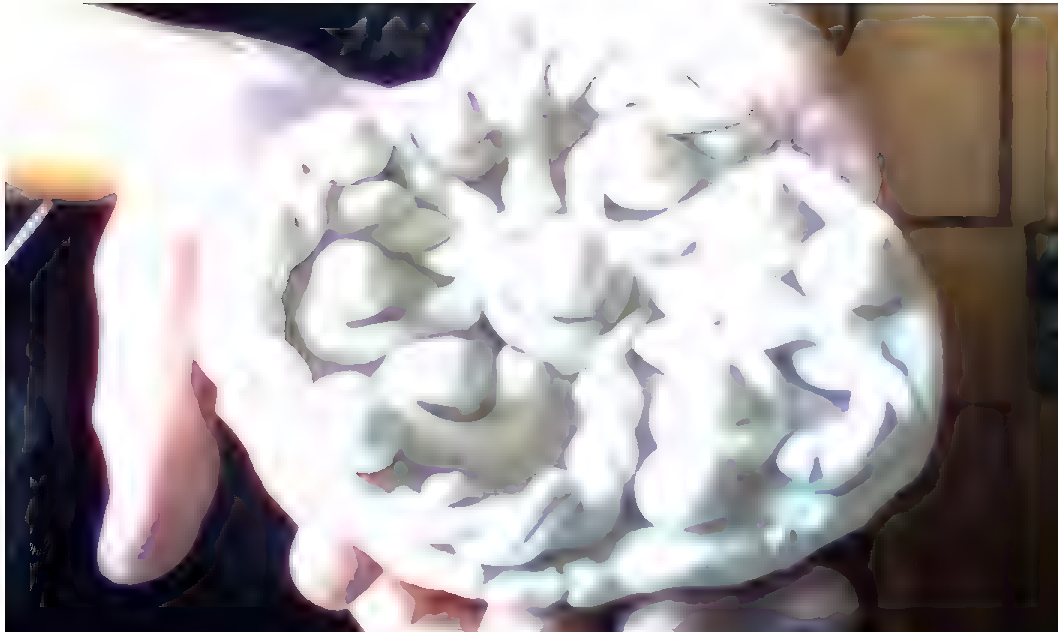


Figure 2. Example of clay mandala, by a 33 year old Caucasian female in the clay condition group with the smallest decrease in STAI scores from pre to post.

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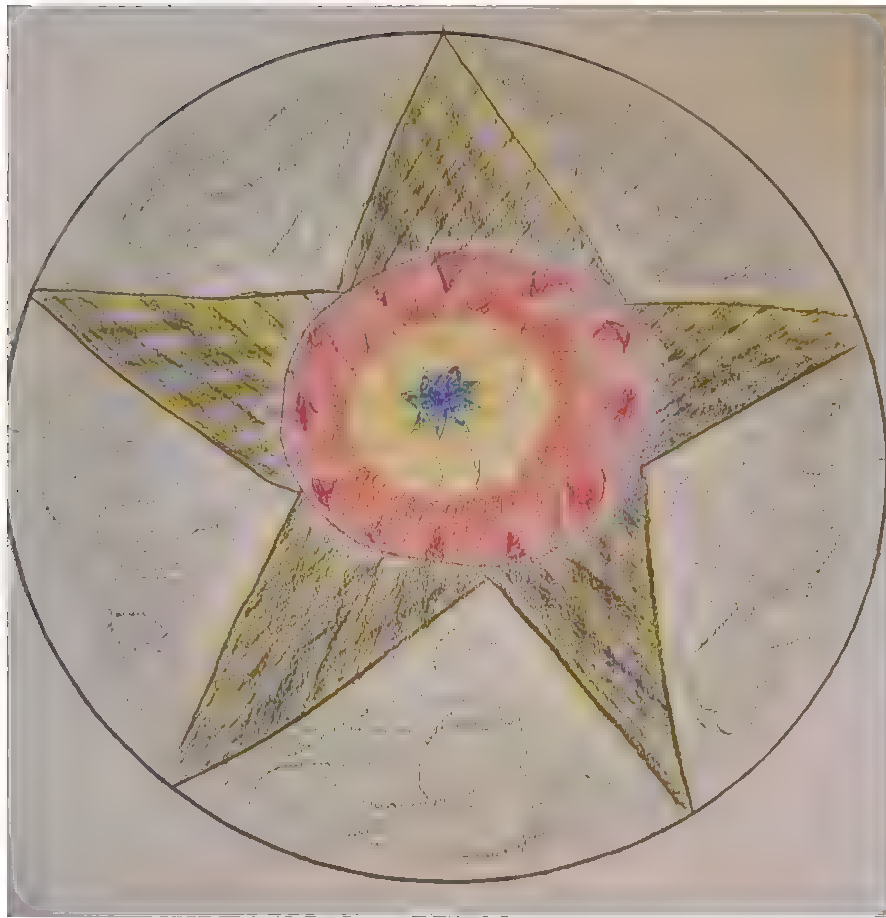


Figure 3. Example of color pencil mandala by a 24 year old Caucasian female in the color pencil group in color pencils condition who experienced the largest change for this condition from STAI pre to post scores.

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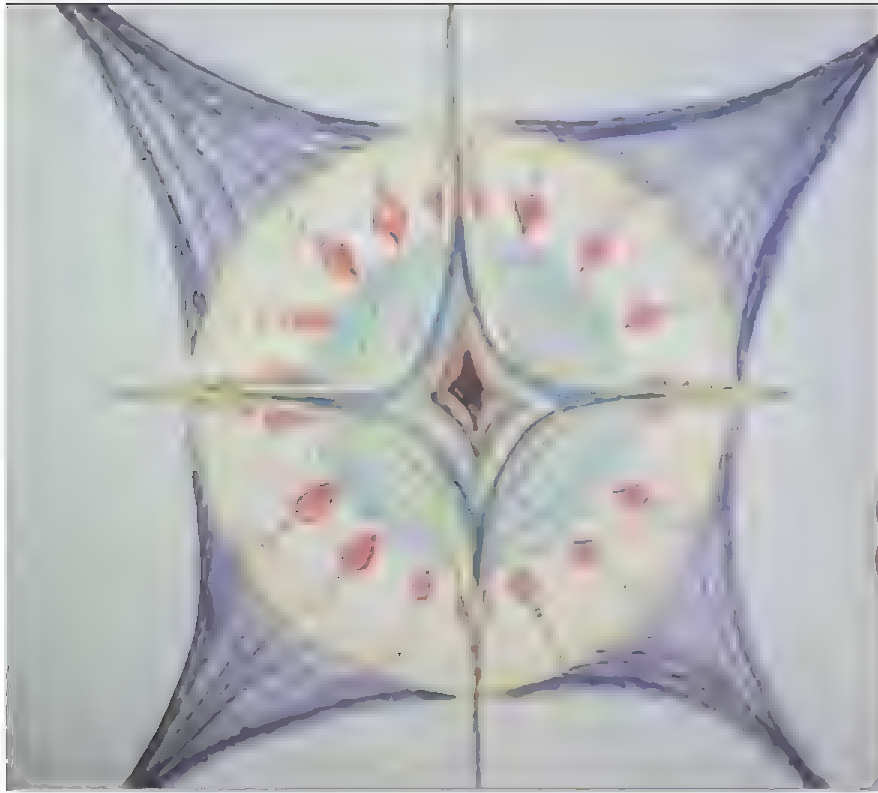


Figure 4. Example of color pencil mandala by a 25 year old Asian/Pacific Islander female in the color pencil group who experienced no change in STAI pre to post scores.

Appendix AFlyer

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ALBERTUS MAGNUS COLLEGE STUDENT IN
MASTERS IN ART THERAPY AND COUNSELING
PROGRAM

**PARTICIPANTS
NEEDED FOR
ART STUDY**

**COMPLETE SURVEY,
AND CREATE ART
WORK**

Must be 18
and up to
participate

IF INTERESTED: PLEASE CONTACT
CAROLINE KORDELL
CELL: 201-937-1220
EMAIL: CMKORDELL@ALBERTUS.EDU

No art experience
needed!!
▲

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Appendix B

Informed Consent form

Informed Consent Form:

This study is being conducted as part of the requirements for the Masters of Arts in Art therapy and Counseling degree at Albertus Magnus College. The goal of this study is to examine art making experiences and well-being.

During this study, you will be asked to complete a demographic form, questions involving how you feel, and take part in an art making activity. Following the art activity, you will be debriefed on the study you just participated in. Your participation in this study will be confidential, and is expected to take no more than 40 minutes. Any discussion and artwork will remain private and confidential. Study session will be individual, only you will meet with the researcher using a video conferencing platform. Please note that art abilities are not a factor and will not be considered.

This is a completely voluntary study and if for any reason you would no longer like to participate, you are welcome to withdraw at any time. There are no anticipated risks for participating in this study. Benefits of this study may include enjoying art making and assisting a graduate student in the completion of her thesis requirement, as well as contributing to the field of art therapy. The Institutional Review Board (IRB) at Albertus Magnus College has approved this study.

Please inform the researcher if you have any allergies to art materials. If you have any questions or concerns about this study, you may contact the following individuals:

The Investigator:
Caroline Kordell
Cmkordell@albertus.edu

Art Therapy Advisor:
Rebecca Arnold, Ph.D., ATR-BC
Rarnold@albertus.edu

Psychology Advisor:
Hilda Speicher, Ph.D.
Hspeicher@albertus.edu

Or: Chair of IRB
Dr. Joshua Abreu, Ph.D.
Jabreu1@albertus.edu

Your checking of this box indicates that you are above 18 years of age, have read and understand the description of the study, have had all your questions addressed, and are willing to participate. Feel free to print a copy of this form for your records.

Name (print): _____

Signature: _____ Date: _____

___ I received a copy of this form for my record

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Appendix C

Art Release Form

For this study, screenshots of your artwork will need to be taken. Below are a number of ways in which these images might be shared, without identifying information, beyond the researcher for educational purposes.

Please check off the educational purposes for sharing images of your artwork (de-identified) that you are comfortable with..

☐ I agree that images of my artwork can be used for educational purposes including publications, presentations at professional conferences, or for training purposes

☐ I agree that images of my artwork can be used for educational purposes including presentations at professional conferences or for training purposes, but not for publications

☐ I agree that images of my artwork can be used for training purposes only

☐ I do not give permission for images of my artwork to be used for any of the above purposes

Signature: _____

Date: _____

Please note that once images have been disseminated in a public venue, it may be difficult or impossible to retract them if you change your mind.

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Appendix D

Debriefing Form

Debriefing Statement:

The purpose of this study was to examine how art making reduces anxiety when creating mandalas. The questionnaire you were given before and after the art making measures anxiety. Participants were randomly divided into two different conditions, those who used clay and those who instead drew their mandala.

The hypothesis was that those participating in the clay group would show a greater decrease in anxiety symptoms over the color pencil drawing groups. I expected this because research shows the movement and sensory experiences that are a part of working with clay provide a more effective therapeutic experience.

If you would like to access more information about this topic, here are some sources:

Elizabeth R. Kimport & Elizabeth Hartzell (2015) Clay and Anxiety Reduction: A One-Group, Pretest/Posttest Design With Patients on a Psychiatric Unit, *Art Therapy*, 32:4, 184-189, DOI: 10.1080/07421656.2015.1092802

Kerry A. Kruk, Paul F. Aravich, Sarah P. Deaver & Roger deBeus (2014) Comparison of Brain Activity During Drawing and Clay Sculpting: A Preliminary qEEG Study, *Art Therapy*, 31:2, 52-60, DOI: 10.1080/07421656.2014.903826

Thank you for your voluntary Participation in this study!

If interested in the overall results from this research, we would be pleased to share them with you! Individual results cannot be reported, only results in aggregate. Please provide your email address: _____ to obtain a copy of the finalized results.

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Appendix E

Demographic Form

1. What is your age _____

2. How do you identify?

- ☐ Male
- ☐ Female
- ☐ Not listed _____
- ☐ Prefer not to respond

3. Please specify the ethnicity you most identify with:

- ☐ African American/Black
- ☐ Asian/ Pacific Islander
- ☐ Caucasian/White
- ☐ Hispanic or Latinx
- ☐ Native American or American Indian
- ☐ Not listed
- ☐ Prefer not to respond

4. How often do you create any form of art?

- ☐ Frequently
- ☐ Occasionally
- ☐ Rarely
- ☐ Never

5. What art material did you work with today?

- ☐ Color Pencils
- ☐ Clay

6. Have you worked with this art material before?

- ☐ Yes
- ☐ No
- ☐ Not sure

7. If you could pick a different art material than what you used today, which material would you pick?

- ☐ Color Pencils
- ☐ Clay
- ☐ I liked the material I used today